

Girard, Crawford county, Kansas: a tornado occurred at 8.40 a. m. of the 22d, destroying all the lighter buildings in its track, and injuring a number of persons. The path of the storm was only from fifty to seventy-five feet in width. Outside of Girard the damage was slight.

Mount Sterling, Montgomery county, Kentucky: a tornado, one hundred yards wide, passed through Bath county on the morning of the 26th, uprooting large trees, blowing down fences, and destroying light houses.

#### NAVIGATION.

##### STAGE OF WATER IN RIVERS.

In the following table are shown the danger-points at the various river stations; the highest and lowest depths for November, 1886, with the dates of occurrence, and the monthly ranges:

*Heights of rivers above low-water mark, November, 1886.*

*[Expressed in feet and tenths.]*

Stations.	Danger-point on range.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River:</i>						
Shreveport, Louisiana.....	29.9	30	10.4	14, 15	6.4	4.0
<i>Arkansas River:</i>						
Fort Smith, Arkansas.....	22.0	25	2.4	15, 16, 18 to 21, 30	1.1	1.3
<i>Little Rock, Arkansas:</i>						
Little Rock, Arkansas.....	23.0	25	8.0	3, 8	1.2	6.8
<i>Missouri River:</i>						
Yankton, Dakota.....	24.0	1, 2, 3	15.3	7	15.0	0.3
Omaha, Nebraska.....	18.0	1, 2, 3	6.2	26 to 29	4.9	1.3
Leavenworth, Kansas.....	20.0	20, 21	5.3	28	2.2	3.1
<i>Mississippi River:</i>						
Saint Paul, Minnesota.....	14.5	22	2.8	14	2.4	0.4
La Crosse, Wisconsin.....	24.0	1 to 5	4.6	26, 27	2.5	2.1
Dubuque, Iowa.....	16.0	1	5.2	30	1.9	3.3
Keokuk, Iowa.....	14.0	1	4.0	30	0.6	3.4
Saint Louis, Missouri.....	32.0	12	7.6	30	4.1	3.5
Cairo, Illinois.....	40.0	30	23.9	11, 12	3.8	20.1
Memphis, Tennessee.....	34.0	30	16.0	15, 16	3.4	12.6
Vicksburg, Mississippi.....	41.0	30	8.5	10, 19	0.0	8.5
New Orleans, Louisiana.....	13.0	17	2.8	27	1.0	1.8
<i>Ohio River:</i>						
Pittsburg, Pennsylvania.....	22.0	26	13.0	17	3.9	9.1
Cincinnati, Ohio.....	50.0	29	30.2	2	3.0	27.2
Louisville, Kentucky.....	25.0	25	11.6	1 to 4	2.6	9.0
<i>Cumberland River:</i>						
Nashville, Tennessee.....	40.0	27	22.6	1	0.5	22.1
<i>Tennessee River:</i>						
Chattanooga, Tennessee.....	33.0	28	13.7	5 to 8, 11 to 14	1.4	12.3
<i>Monongahela River:</i>						
Pittsburg, Pennsylvania.....	29.0	26	13.0	17	3.9	9.1
<i>Savannah River:</i>						
Augusta, Georgia.....	32.0	27	11.5	7	5.4	6.1
<i>Mobile River:</i>						
Mobile, Alabama.....		17	18.5	15	15.5	3.0
<i>Sacramento River:</i>						
Sacramento, California.....		2 to 11, 23 to 30	8.0	1, 12 to 22	7.8	0.2
<i>Willamette River:</i>						
Portland, Oregon.....		1, 30	2.0	6	—1.1	3.1
<i>Colorado River:</i>						
Yuma, Arizona.....		3, 11, 25	15.4	1, 27 to 30	15.2	0.2

Light ice passed down the Mississippi River at La Crosse, Wisconsin, from the 19th to 23d, from the 24th to 28th the flowing ice had become heavy, and on the 29th the river was frozen over and navigation closed. The "Mountain Belle," the last boat of the season at La Crosse, arrived and departed on the 21st. The steamer "Saint Paul" left Saint Paul, Minnesota, for Saint Louis, Missouri, on the 10th; this was the last departure of the season and, owing to the heavy ice in the river, navigation was practically closed on that date.

On the Red River of the North at Saint Vincent, Minnesota, the cold weather preceding the 24th had thickened the ice to such an extent as to cause a suspension of navigation and the ferry boat plying between this point and Pembina, Dakota, was obliged to lay up, thus closing navigation here for the season of 1886. By the 30th the ice on the river had become strong enough to allow heavily-loaded teams to cross.

The Tennessee River below Chattanooga became navigable about the 20th, after having been closed since the middle of July, when all boating was practically stopped by low water.

The following notes relate to the state of river navigation during the month:

Cairo, Illinois: the rise in the Ohio River which commenced on the 17th enabled all river craft to resume navigation about

the 24th. The Mississippi River between here and Saint Louis remains comparatively low.

Nashville, Tennessee: navigation was resumed on the Cumberland River on the 18th; the river had been unnavigable on account of low water since July 30th.

Louisville, Kentucky: navigation on the Ohio River was resumed at this point on the 19th, for several weeks prior to this date navigation had been discontinued by the larger class of boats.

Little Rock, Arkansas: on the 19th the Arkansas River began rising rapidly and several boats left port on that date; the river had been very low since October 11th.

Green Bay, Wisconsin: on the 24th Green Bay became frozen over and navigation at this port was closed for the winter.

Bismarck, Dakota: the Missouri River froze over at this point during the 16th and 17th and navigation was closed for the season.

Duluth, Wisconsin: navigation at this port closed for the season on the 30th; last departure for the lower lakes on the 28th; last arrival, the propeller "James Fisk, jr.," on the 30th.

#### FLOODS.

Buffalo, New York: during the heavy storm that prevailed during the 18th and 19th the wind blew steadily from the west, driving the water of the lake over the lower portion of city and damaging considerable property. Over two hundred feet of the track of the New York Central Railroad were undermined and washed away; the damage done was estimated at \$10,000. The sea-wall was damaged, and all houses along a canal which runs through a part of the city were filled with water to a depth of two feet. Considerable farm property along the lake shore was submerged.

Poughkeepsie, Dutchess county, New York: on the morning of the 18th over two inches of rain fell in three hours; this is the largest rainfall that has occurred within such a short time for several years. Streams were suddenly swollen and sewers choked, while the lower part of the town was flooded. The storm was accompanied by high southeasterly winds, blowing down telegraph poles and signs and interrupting communication.

Memphis, Tennessee: on the 24th a freshet in Wolfe River, the result of heavy rains during the previous week, carried away lumber and damaged other property to an extent of \$6,000.

#### ATMOSPHERIC ELECTRICITY.

##### AURORAS.

Mount Washington, New Hampshire: an auroral light was noticed in the north at 7.50 p. m. of the 2d; when first seen it was in the form of a white light with a slight, lateral, wavy motion from west to east. The aurora at its centre rested directly on the northern horizon and extended about 30° east and west of the north; altitude 50°. At 9.20 p. m. a few streamers were observed rising from the centre of the aurora and terminating near the zenith; streamers were seen at intervals of from three seconds to five minutes until 10.40 p. m. The display reached its maximum brilliancy between 9.20 and 10.40 p. m. and disappeared after midnight.

Fort Assinaboine, Montana: an auroral arch was visible from 11.33 to 11.57 p. m. of the 2d; it was of a pale straw color; altitude, 7°; azimuth, 50°; no streamers appeared. The display was obscured by clouds at 11.57 p. m. On the 3d a brilliant aurora was visible from 10.35 to 11.20 p. m. The observer states that in shape and color it resembled that seen on the previous night, and appeared to be a continuation of the same aurora, although the display of the 3d was accompanied by streamers of a bluish white tint extending almost to the zenith and having a motion resembling the blaze of a large fire when disturbed by the wind.

Duluth, Minnesota: on the 3d, at 10.15 p. m., a faint aurora in the form of a broad belt of light was visible in the northern horizon; azimuth, 160° to 240°; altitude, 10°; the display ended at 11.55 p. m.